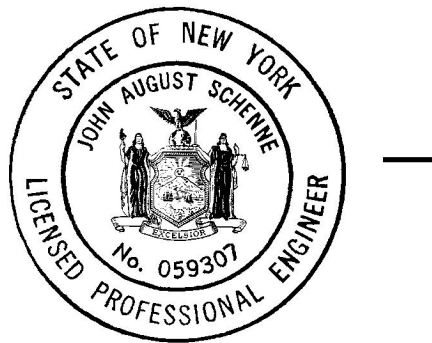


STORM WATER MANAGEMENT REPORT

**Seneca Greenhouse
2250 Transit Road
West Seneca, New York**



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PREPARED BY:

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1.0 HYDROLOGIC/HYRAULIC ANALYSIS

Soils

The USDA-SCS Soil Survey of Erie County was utilized to determine the soil characteristics on the project site. These soil types are a Group D hydrologic soil.

Post-Development Conditions

The development is proposed to support an expanded parking lot and landscape features, (with parking, sidewalks, and ancillary facilities). Specific details for the project are presented in a set of engineering drawings to be submitted separately. The total project is intended to be fully developed in accordance with these separate engineering drawings.

Bioretention Pond

A bioretention pond is proposed to temporarily store storm water and provide for its gradual release over a period of time. In general, the system will receive storm water conveyed across the site by means of sheet flow and storm water piping.

Storm basin storage will be utilized to collect the storm water from the developed Project site's watershed areas. A gradual storm water release from the detention basin storage will be accomplished through the installation of hydraulically sized outlets in the basin's outlet structure.

4.1 CALCULATIONS

The storm water analysis consists of the design of proper detention facilities using the SCS unit hydrograph method. The facilities were also required to be designed to meet State pollutant goals, reduce channel erosion, prevent overbank flooding, and help control extreme floods.

Pre-development

A hydrograph was developed for the site drainage area and for 2.5 acres of existing stone parking area, greenspace and a portion of the building using criteria from the modeling software for the 1, 10, 25, and 100-year storm considering predevelopment conditions (as discussed in Section 2.0). A Type II synthetic rainfall distribution was used for this analysis. A Type II rainfall is a model of an intense, brief rainfall event for a portion of the State in which the subject site is located. Based on the predevelopment grades, one (1) distinct drainage area exists on the site. This drainage area is referred to as Pre-A.

A computer hydrograph was developed for the predevelopment drainage area using criteria from the SCS Unit Hydrograph Method modeling software for the 2-year storm considering predevelopment conditions. Appendix A contains the calculations and computer printout of the hydrograph analyses. The peak discharges and total volumes of the hydrographs for predevelopment conditions were determined to be:

| Storm Event | | Peak Flow | Total Volume |
|--------------------|--|------------------|---------------------|
| | | (cfs) | (acre-feet) |
| 1-Year | | 1.59 | 0.086 |
| 10-Year | | 8,68 | 0.440 |
| 25-Year | | 10.57 | 0.535 |
| 100-Year | | 13.65 | 0.694, 10 |

Post Development

A hydrograph was developed for the post development site drainage areas using criteria from the modeling software also for 25-year storm considering developed conditions. The peak discharges and total volumes of the hydrographs for post development conditions were determined to be:

| Storm Event | | Peak Flow | Total Volume |
|--------------------|--|------------------|---------------------|
| | | (cfs) | (acre-feet) |
| 1-Year | | 0.12 | 0.081 |
| 10-Year | | 0.72 | 0.475 |
| 25-Year | | 0.81 | 0.583 |
| 100-Year | | 0.92 | 0.762 |

Storm Water Detention and Treatment

As indicated by the calculations, the post development runoff has increased from predeveloped conditions for the overall Project site.

All of the calculations for the sizing of the basin and outlet structure are provided in Appendix A.